PROGRAM BUDGETING:
APPLYING ECONOMIC ANALYSIS
TO GOVERNMENT EXPENDITURE DECISIONS

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A fundamental shift is occurring in the focus of that branch of economics traditionally described as public finance. As recently as the late 1940's or early 1950's, the textbooks in the field primarily dealt with taxation; a few chapters were devoted to debt and fiscal policy and perhaps a section described the mechanics of governmental budgeting.

The pendulum now appears to be swinging sharply. Recently the emphasis in public finance, certainly so much of the new work, has been on the expenditure side, in attempting to apply economic analysis to governmental expenditure decisions. Benefit/cost comparisons, cost/effectiveness analysis, and program budgeting all have become important manifestations of this shift in emphasis. The most recent and ambitious operational effort along these lines is the Planning-Programming-Budgeting System of the Federal Government which may, in retrospect, represent a major advance in the application of economic analysis to public sector decision-making.

This paper will deal mainly with this new development, but in doing so the antecedent efforts will be related to the current budget reform movement and possible future changes will also be indicated.

On August 25, 1965, President Lyndon B. Johnson announced "...a very new and very revolutionary system of planning and programming and budgeting throughout the vast Federal Government--so that through the tools of modern management the full promise of a finer life can be brought to every American at the lowest possible cost." [1]

Before evaluating this governmental innovation, it may be useful to see how earlier developments in the economic analysis of governmental expenditure decisions relate to it. We may then be in a better position to evaluate the "new" and "revolutionary" aspects of the Planning-Programming-Budget System, or PPBS, as the effort is commonly called.

Antecedents of PPBS

Economists have long been interested in identifying policies that would promote economic welfare, specifically by improving the efficiency with which a society uses its resources. Governmental budgeting provides one important example of this concern.

At the theoretical level, economists have wrestled with the question, what are the necessary and sufficient conditions for achieving the optimum level of welfare? Under the most ideal conditions, and using a most general approach, this ideal state has been defined. However, what started as an attempt to determine economically superior public policies concluded at one point that economists have little basis for making any policy recommendations at all. This leads, of course, to what Hitch and McKean refer to as "...a whole branch of economic theory unfortunately labeled welfare economics..."[2]

In the welfare economics literature, the optimum level of welfare is most rigorously defined by what is termed Pareto Optimality--where it is impossible to make anyone better off without making anyone else worse off, or technically when the marginal rate of substitution is equal for all consumers and is also equal to the marginal rate of transformation for all products.

Certainly, as anyone who has dabbled with the indifference curves and Edgeworth boxes that underly these statements will quickly attest, formal welfare economics is rather elegant. The identification of the actual movements to Pareto Optimality--the translation into operational usefulness--may be another matter.[13]

For example, because of the difficulty of making interpersonal utility comparisons, at one point it appeared that economists could not recommend a policy which, although it will benefit many people, will also hurt a few. The question was raised, "on what objective basis can we say that the people who are benefitted are more important than those who are hurt?" Strictly speaking, this approach would have prevented the Government from implementing anti-recession policies, because after all some people on fixed incomes do benefit from the low prices which often accompany depressed conditions.

Ingeniously the so-called New Welfare Economics developed the concept of compensation tests--would those who benefit from a change be able to compensate the losers fully and still have some net benefit left over? If the answer is in the affirmative, it is reasoned that the change would improve welfare. [14] There are all sorts of subsidiary questions as to the need for compensation actually to be paid, but we can ignore them for the present inquiry. It has been said that the progressive income tax may be looked upon as a built-in compensation or income redistributive advice helping society achieve that state of distributional equity that is socially desired. [15]

Where does that leave us? We can argue that changes that would raise the level of allocative efficiency of the economy--i.e. increase the amount of economic production available to the Nation--may be deemed to improve economic welfare. Hence, in appraising a specific contemplated action--a

government project or program in our case--we are, from this point of view, asking the double question: Do the gains to the beneficiaries outweigh the losses to the rest of the community and, hence, do the benefits exceed the costs to the economy as a whole? The benefits are in the form of increased production of goods and services and the costs are in terms of the foregone benefits that would have been obtained by using the resources in some other activity.

Benefit/cost analysis has been applied by a few Federal agencies, particularly the Corps of Engineers and the Bureau of Reclamation, to the evaluation of prospective projects for a good many years. Despite important operational difficulties, such as choosing an appropriate discount rate which would correspond to a realistic estimate of the social cost of capital, the use of benefit/cost analysis has yielded several gains in improving the allocation of government resources. It has served as a partial screening device to eliminate obviously uneconomical projects, i.e. those whose prospective gains are less than estimated costs. It also has provided some basis for ranking and comparing projects, i.e. a means of choosing among alternatives.[16] Perhaps the overriding value of benefit/cost analysis has been demonstrating the importance of making fairly objective economic analyses of proposed essentially political actions and perhaps narrowing the area in which political forces may operate (see Table 1 for a typical example).

A related development has been the application of cost/effectiveness or cost/utility analysis to military budget decision-making. Much of the development effort was performed at the Rand Corporation under Air Force auspices.[17]

Table 1

TYPICAL BENEFIT/COST ANALYSIS
WATER RESOURCE DEVELOPMENT PROJECT

	Amortization Period	
	50 years	100 years
Total investment	$3,100,000	$3,100,000
Annual costs		
Interest & amortization	$123,400	$101,600
Operation, maintenance, etc.	25,400	25,900
Total Annual Costs	$148,800	$127,500
Annual benefits		
Flood damage reduction	$168,000	$206,000
Fish, wildlife, & recreation	32,800	35,500
Total Annual Costs	$200,800	$241,500
Benefit - cost ratio	1.4	1.9

Source: James River and Tributaries, Jamestown, North Dakota, Letter from the Secretary of the Army Transmitting a Letter from the Chief of Engineers, 89th Congress, 1st session, House Document No. 266, August 17, 1965, p. 119.

For military programs, ordinarily the benefits or results cannot be expressed in dollar terms. However, the end objective, such as the capability to destroy X number of enemy targets under stipulated conditions, can be expressed in quantitative terms and, more important, the alternative methods of achieving the objective--Y bombers versus Z missiles or some combination--can be priced out and a least cost solution arrived at. This approach has been at the heart of the Planning-Programming-Budgeting System introduced in the Pentagon so successfully by Secretary McNamara and economists Hitch, Enthoven and their associates. It clearly has been the success of the McNamara approach which has led to the adoption of a government-wide PPBS effort. Table 2 illustrates the fundamental shift that has occurred in military resource allocation.. Under the old or pre-McNamara system, each service competed for a larger share of the defense budget and, within the service totals, strategic weapons such as ICBM'S competed for funds with tactical programs. Under the new system, close substitutes for performing the same or similar mission are compared with each other, such as ICBM'S and submarines launched strategic missiles, although different services are involved.

It will be recognized that the ingredients of the concerns of welfare economics are here--how to attain a higher level of economic performance with the resources at hand and thus increase the welfare of society.

One other development needs to be acknowledged in sketching out the origin of the current Program Budgeting effort and that is the work on Performance Budgeting encouraged by the two Hoover Commissions and implemented in part by the U.S. Bureau of the Budget. By a performance budget the Hoover Commission meant "...a budget based upon functions, activities, and projects...".

Table 2

SHIFT IN MILITARY RESOURCE ALLOCATION

Old Budget System	New Planning-Budgeting System
Navy:	**Strategic forces:**
Polaris	Polaris
Marine Corps	ICBM'S
Carrier task forces	Long range bombers
Air Force:	**General purpose forces:**
ICBM'S	Marine Corps
Tactical aircraft	Armored divisions
Air defense aircraft	Tactical aircraft
Long range bombers	Carrier task forces
Army:	**Continental defense forces:**
Air defense missiles	Air defense aircraft
Armored divisions	Air defense missiles

Such an approach, it was contended, would focus attention on the general character and relative importance of the work to be done, rather than upon the things to be acquired. /8 Although it may not sound it, this was a fundamental shift in budgetary thinking at the Federal level. Less of the budgetary details was to be devoted to changes in numbers and types of clerical personnel and office supply usage and more attention was to be given to the activities to be performed. However, the implementation was slow and only partial. The current emphasis on program budgeting may represent the delayed fulfillment of the Hoover Commission recommendation. As we will see, cost/benefit and cost/effectiveness analysis also play important parts in this new budgetary approach.

The Mechanics of PPBS

The Planning-Programming-Budeting System (PPBS) which each major Federal Government department and agency is now setting up in response to the directive from President Johnson is patterned on the approach which has been rather successfully instituted and operated at the Pentagon. It is being developed by the Bureau of the Budget working with the various Federal departments and agencies that are charged with the actual implementation. The entire system is new and its structure has barely been developed or put into operation to any significant degree. Hence, it should be recognized that it is somewhat hazardous to attempt a description, much less an evaluation, at this early point.

PPBS is based, according to the Bureau of the Budget, on the introduction of three major concepts into Federal Government operations: [9]

1. The development in each government agency of an analytical capability to examine in depth both agency objectives and the various programs to meet these objectives. This is hardly the traditional "green eye shade" type of approach to financial management and may be far more difficult to accomplish. However, this does widen the frame of reference of governmental management officials and sets the stage for the next steps.
2. The formation of a five-year planning and programming process coupled with a sophisticated management information system. This should yield an improved basis for decision-making by department heads and the President in that it is designed to provide a comprehensive framework for acting on the myriad of questions that face the management of an organization, public or private.
3. The last and perhaps fundamental concept to be introduced is the creation of an improved budgeting mechanism which can take broad program decisions, translate them into more refined decisions in a budgetary context, and present the results for Presidential and congressional action. This may be more of a statement of ultimate desire and long-term objective to be achieved.

Through the combined planning and budgeting process, it is hoped that broad national goals will be reduced to specific program operations and the most economical method of carrying them out will be identified. Four major steps have been identified which will need to be taken in order to accomplish this rather tall order.

1. Identifying national goals - The specific goals which are deemed proper and appropriate for the Federal Government to be seeking will somehow have to be selected in the light of a comprehensive evaluation of national needs and objectives. This is now beginning to get underway in each major department and agency and there is little indication of the formal methodology, if any, which is employed or available at this step of the process.

2. Relating broad goals to specific programs - Specific alternative programs which may help to achieve the broad national goals and objectives will then be examined and the ones that appear to be most promising, given the various constraints under which the Federal Government operates, will have to be selected. The subject of constraints is not one to be passed over too quickly. The typical government agency may find itself with little discretion in selecting the optimum combination of programs which can assist in achieving broad national goals in its area of operations. They may very well find that there is little or vague or conflicting congressional guidance as to the goals to be attained. However, there may be very clear and precise congressional directive as to which specific programs--and in what amounts and particulars--are to be conducted. The task here may well be both to infer the goals from the specific programs that have been authorized by the Congress and then to conjure up new or improved means (other programs) to achieve these goals or objectives.

3. Relating programs to resource requirements - The specific costs of alternative programs will then need to be estimated (in terms of total resources they would require) in order to compare their efficiency in achieving the goals. To those who are acquainted with benefit/cost or cost/utility analysis, this will be no mean achievement in many illusive program areas. All sorts of specific techniques come to mind here, including such formal ones as benefit/cost and cost/utility analysis, as well as more informal examinations with less quantification. In view of the many theoretical and operational shortcomings of these tools, the user will need to keep in mind that the basic purpose of any of these techniques is the carrying out of broad systems analyses in which alternative programs are compared with respect to both the costs to be incurred and the gains to be achieved. Recent attempts to apply benefit/cost analysis to fields other than water resources (such as health, education, transportation, research, etc.) reveal the host of pitfalls and shortcomings of available techniques and methodology.

4. Relating the resource inputs to budget dollars - Finally, the manpower, facilities, and other source requirements will need be translated into budget dollars--all projected several years ahead--so that the costs of the programs can be analyzed over a meaningful period into the future and decisions made to implement the PPBS results. This sounds much easier than it is likely to be in practice. To cite one among numerous possibilities, one may wonder as to how the externalities involved--especially non-Federal costs--will be handled. Nevertheless, this four-step procedure sounds both necessary and desirable.

Perhaps the most essential ingredient--and one not prominently mentioned in the available materials on PPBS--is the acceptance, at each line and staff level, of the value of and need for the tremendous amount of detail and effort being imposed. /10 To some degree this is inherently both subjective and circular. The better the quality of input into the system, the greater the likelihood of good results; but it will be the value of the results that will justify the substantial expenditure (perhaps investment is a more appropriate term) of the time and effort involved. The parallel here to the introduction of PPBS at the Pentagon may not be complete. The persons involved in that operation had spent many years at such organizations as Rand where they become intimately knowledgeable to military concepts, organization, requirements, and constraints. They had developed specific methodology for making military systems analysis; they had identified the key points of budgetary decision-making (the selection of weapon systems); and they had developed specific formats and concepts for making comparisons among alternative systems, including a sophisticated methodology for costing out alternatives. One may wonder where the civilian government counterparts of these defense PPBS personnel will come from. The answer is neither obvious nor clear.

The Framework of the System

The main product of PPBS is designed to be a comprehensive multi-year Program and Financial Plan for each government agency, which will be updated periodically and systematically. An early and essential step is determining, for each agency or department, the output-oriented categories which cover its

total work and area of responsibility. [11] Such a mission-oriented or objectives-oriented program format would be in sharp contrast with present practice which focuses on the increase in funds over the previous year's budget required to meet rises in the annual expenses of the agency--i.e. a budget review which is oriented to organizational units and to inputs such as wages, travel costs, office equipment, and so forth.

The first level of detail or breakdown in preparing the Program and Financial Plan is termed Program Categories, which are groupings of a department's activities serving the same broad objective or mission. For example, one such broad program objective may be considered to be improvement of higher education. This program category might contain such Federal programs as aid to undergraduate, graduate, and vocational education, as well as such auxiliary activities as library support and research assistance.

The second level of information is the Program Subcategories. These combine activities on the basis of somewhat narrower objectives contributing directly to the broad purposes of the program category as a whole. Thus, expansion of engineering and science training could be a program subcategory within the program category, "improvement of higher education."

The third level of detail is the Program Element, which is the basic building block of the PPBS structure. An element may be a specific product that contributes to the Program's objectives. An element could include personnel as well as equipment and facilities. An example of a program element expressed in terms of the objectives served would be the number of teachers to be trained in using the New Math as a part of "improvement of elementary education."

There are many difficulties involved in selecting the measurement of the output or performance of a program. Conceptually, only the end-product should be measured rather than intermediate outputs. For example, in the Post Office Department, the end product might reflect the number of letters delivered, and not the number of times these letters were handled at the various stages of their journey.

Similarly, in the case of hospital programs, it may be possible to look at output in terms of patient-days. However, the mission of a hospital might be described better as proper treatment of patients rather than the generation of a number of patient-days. Therefore, the number of patients treated may be a better unit for measuring hospital output. However, within a broader framework, the mission of a health program might be viewed as promotion and maintenance of good health and the output measure might reflect prevention of diseases as well as their treatment. /12 Legend has it that in better days Chinese patients paid their doctors in times of health and not of illness--a high mark of output rather than input orientation.

The Bureau of the Budget (the official custodian of PPBS) itself on occasion may mistake the nature of governmental output. In the February 21, 1966 supplement to the PPBS directive, it lists "training <u>costs</u> per worker" (underscoring supplied) as a possible means of measuring output!

The agencies are encouraged to consider comparisions and possible trade-offs among program elements which are close substitutes, even though the activities may be conducted in different bureaus. This attempt to introduce some element of competition is designed to achieve greater effectiveness from the limited budgetary resources utilized for a given program category or subcategory.

In sharp contrast to the historical focus of Federal budgeting on the next twelve-month fiscal period, PPBS is intended to extend usually five years into the future. In some cases, such as timber production and multiple-purpose water resource projects, longer time spans may be more appropriate.

Table 3 is a hypothetical example of how this new approach to Federal budgeting could work. Transportation is a good example of a major Federal program category which consists of a variety of activities or program subcategories carried on in different departments, with little attention to gaps or overlapping functions or conflicting objectives. The major agencies involved are the Bureau of Public Roads and the Maritime Administration in the Department of Commerce, the Federal Aviation Agency, the Corps of Engineers in the Department of the Army, the Forest Service in the Department of Agriculture, the National Park Service in the Department of the Interior, the mass transit assistance program in the Department of Housing and Urban Development, plus a number of regulatory operations, such as the ICC, CAB Federal Maritime Board, and the Coast Guard among others. Significantly, only a few of these agencies are scheduled to be absorbed by the new Federal Department of Transportation.

Table 4 illustrates the possible specific Elements which might comprise one of the transportation subcategories--urban commuter transportation. These elements may vary from the number of miles of way placed under construction (a measure of capital investment) to the number of ton-miles of freight carried (a measure of operation or utilization).

Table 3

ILLUSTRATIVE OUTLINE OF A NATIONAL TRANSPORTATION PROGRAM

Elements	Fiscal Years
GENERAL INTER-CITY TRANSPORT	1967, 1968, 1969, 1970, 1971, 1972
Interstate Highways	
Interstate Highway Program	
Primary System Highways	
Domestic Water Transport	
Inland Waterways Facilities	
Maritime Programs	
Aviation	
CAB Subsidies to Airlines	
FAA and NASA Aircraft Technology	
URBAN COMMUTER TRANSPORTATION	
Urban Highway Systems	
Urban Transit Systems	
RURAL ACCESS	
Secondary System-Roads	
Forest, Public Lands, National Parks Roads	
Aid to Local Service Aviation	
MILITARY STANDBY TRANSPORTATION	

Table 4

ELEMENTS OF A TRANSPORTATION PROGRAM CATEGORY:
URBAN COMMUTER TRANSPORTATION

Urban highways

Passenger-miles carried
Ton-miles of freight carried
Number of miles of way completed
Number of miles of way placed under construction

Urban transit systems

Passenger-miles carried
Ton miles of freight carried
Number of miles of way completed
Number of miles of way placed under construction

From the above information, some comparisons might be made between urban highways and urban transit systems in terms of:

1. Capital cost per mile of way.
2. Operating cost per mile of way.
3. Average commuter travel per mile of way.

Personally, I would doubt whether, in the initial stages, the Planning-Programming-Budgeting System is able to do much toward rationalizing the whole gamut of Federal transportation programs. Presumably the current emphasis is on improving the "building blocks", the difficult task of evaluating the individual components. Nevertheless, Tables 3 and 4 are indicative of the broader horizons of the new breed of governmental budgeteers and may represent an initial small step along a relatively new path in governmental resource allocation.

Some Long-Term Impacts

Assuming that some aspects of the Federal Government's Planning-Programming-Budgeting System do increasingly become operational at the departmental, then bureau, and then program level, the decision-making process in the Federal Government ultimately may undergo substantial change. With the introduction of sophisticated managerial tools such as benefit/cost, cost/utility, and systems analysis generally, there will be a reduced tendency for decisions on authorizing and financing individual government programs to be made in isolation and solely on the basis of subjective, intuitive judgments. Of course, the computers will not replace managers in making decisions, nor will staff analysts replace the functions of line management.

Changes may well occur both in the types of government officials hired and promoted and in the kinds of considerations and information they need to deal with. Nevertheless, even after the implementation of PPBS at the congressional level--which is proceeding at a much slower pace than in the Executive Branch--political consideration at both executive and legislative levels will continue to play key roles.

It is possible that the composition of the Federal budget will shift substantially as a result of the implementation of the PPBS approach. On the basis of the preliminary work that has been done to date, it appears that benefit/cost and similar analyses increasingly will show that certain government programs yield a greater economic return (dollar benefit to the nation) than do others.

Federal expenditures for education, training and retraining, and health--so-called investments in "human" resources--are likely to yield estimated benefits substantially in excess of total costs. In contrast, some of the more traditional construction-oriented activities, notably irrigation, power and other multipurpose water resource projects, are likely to show up far less favorably in this regard. Hence, some shifts from "physical" to "human" capital investment are likely to take place in the Federal Budget, as PPBS enfolds its long-term influence on the government and the economy. /13

Also, a "demonstration" effect on state and local governments and on private companies themselves will occur as expertise is demonstrated by Federal civilian agencies in putting into successful practice the planning concepts and techniques originally developed for and adopted by the military establishment. The initial impact may be transmitted via grant-in-aid programs to states and localities and traditional procurement contracts with business firms.

The Prospects for PPBS

In testimony before a congressional committee shortly after the Presidential announcement of PPBS, Budget Director Charles Schultze stated that he did "... not want to leave anybody with the idea that what we are doing is

some revolutionary change. It really is an improvement in what we are doing now, a systemization and routinization, if you will...". /14 Perhaps the revolutionary has become routine in the Great Society.

As almost every knowledgeable person who has examined the current or pre-PPBS Federal budgetary process has concluded, major shortcomings are apparent and fundamental improvements are needed. /15 For example, there has been little interest in focusing on the goals and objectives of government spending programs or, as a result, on alternative and more effective ways of achieving them. The future costs of present decisions are often ignored. Hence, it is not surprising that formal planning and systems analysis has had limited effect on budget decisions to date.

The PPBS approach obviously is designed to help remedy these shortcomings. If it succeeds in only a limited way, it will represent a major advance in the application of economic analysis to the allocation of public resources. Some initial shortcomings--such as the lack of public availability of the results of the analyses--may be overcome in time.

It obviously is premature for any judgment as to the liklihood of PPBS succeeding in what it is attempting to do. Will the vast system of reports generate into a wheel-spinning operation, or will the results become a significant factor in public policy formulation? From one viewpoint, PPBS is too ambitious, in that it is attempting to apply economic and systems analysis to all of the vast gamut of civilian government operations simultaneously. Perhaps some pilot studies or a few test cases in civilian agencies work would have provided a sounder basis on which to proceed.

From another viewpoint, however the PPBS approach may be failing to come to grips with the larger choices in allocating Federal funds among different agencies and programs. 'Would a dollar be more wisely spent for Education or for Public Works?" This fundamental question implicit in the allocation of budget funds is not raised anywhere in the budgetary process at the present time nor is it likely to be answered or even raised under the suboptimizing approach of PPBS as it is presently being implemented.

This apparent satisfaction with suboptimization is also evident in the historical experience in the two areas where program budgeting and benefit/cost analysis have been most widely used--national defense and water resource development. For example, much effort has gone into such analyses as comparing proposed ICBM systems with long-range bombers as alternative means of fulfilling a strategic (or general war) requirement. Little if any attention has been devoted to determining the optimum allocation of the defense budget between strategic forces and limited war (or general purpose) forces. Yet the latter kind of choice may be the critical or fundamental type of decision to be made in preparing the defense budget.

Nevertheless, such questions dealing with fundamentals are being raised in a general way and at the highest levels during the present period of attempting to reduce some civilian government expenditures in order to offset the inflationary impacts of the Viet Nam military buildup. In a recent statement to the National League of Cities, President Johnson urged the mayors to defer or stretch out construction outlays--"I am simply asking you to put first things first". One newspaper commented on this as follows:

> 'What then should be put first? More NASA blast-offs at Cape Kennedy or more youngsters in Head Start and The Job Corps? Better food and better housing or questionable research and development projects?" 16

Perhaps it is inevitable that the formal budget process will continue to fail to come to grips with these basic, but perhaps too elusive, questions. The rule of thumb of budget preparation which I reported to a Congressional Committee a few years ago still appears to be holding--the smaller and smaller the item the more and more attention is lavished upon it.

In any event, the application of a formalized Planning and Programming and Budgeting mechanism in the Federal Government augurs well for extending the use of economic analysis in making governmental expenditure decisions. From one suboptimization viewpoint, it already has worked wonderously well. The institution of PPBS has resulted in a very brisk labor market in Washington for economists, systems analysts, and possessors of related skills.

/1 The White House, Introduction of New Government-Wide Planning and Budgeting System, August 25, 1965, p. 3.

/2 Charles J. Hitch and Roland N. McKean, The Economics of Defense in the Nuclear Age, Cambridge, Harvard University Press, 1960, p. 163.

/3 I.M.D. Little, "The Foundations of Welfare Economics, Oxford Economic Papers, June 1949, pp. 227-246; E. J. Mishan, "A Survey of Welfare Economics, 1939-59," Economic Journal, June 1960, pp. 197-265; Tibor Scitovsky, "The State of Welfare Economics," American Economic Review, May 1951, pp. 303-315.

/4 J. R. Hicks, "The Foundations of Welfare Economics," Economic Journal, December 1939, pp. 696-712; N. Kaldor, "Welfare Propositions of Economics and Inter-Personal Comparisons of Utility," Economic Journal, September 1939, pp. 549-552; O. Lange, "The Foundations of Welfare Economics", Econometrica, 1942, pp. 215-228. Tibor Scitovsky, "A Note on Welfare Propositions in Economics," Review of Economic Studies, November 1941, pp. 77-88.

/5 Mishan, op. cit., p. 254. It may be intriguing to speculate on the significance of financing programs such as education (which it appears funnel a more than proportionate share to the low income areas of society) by relatively regressive property taxes and defense (which appears to favor high income areas) by relatively progressive income taxes.

/6 Otto Eckstein, Water Resource Development: The Economics of Project Evaluation, Cambridge, Harvard University Press, 1958; John D. Krutilla and Otto Eckstein, Multiple Purpose River Development, Baltimore, Johns Hopkins Press, 1958; Roland N. McKean, Efficiency in Government Through Systems Analysis, New York, John Wiley & Sons, 1958. For a less optimistic evaluation, see Gerhard Colm, "National Goals Analysis and Marginal Utility Economics", Finanzarchiv, July 1965, pp. 209-224.

/7 Hitch & McKean, op. cit.; E. S. Quade, editor, Analysis for Military Decisions, New York, Rand McNally, 1964.

/8 U.S. Commission on the Organization of the Executive Branch of the Government, Budgeting and Accounting, Washington, U.S. Government Printing Office, February 1949, pp. 7-12.

/9 This section is drawn from statements by Budget Director Charles J. Schultze in Joint Economic Committee, Fiscal Policy Issues of the Coming Decade, Hearings before the Subcommittee on Fiscal Policy, July 1965, pp. 59-96 and Joint Committee on the Organization of the Congress, Organization of Congress, Part 12, August-September 1965, pp. 1775-1835.

Footnotes (continued)

/10 Cf. David Novick, editor, Program Budgeting, Cambridge, Harvard University Press, 1965, especially Part III: Implementation and Operation; George A. Steiner, "Program Budgeting, Business Contribution to Government Management", California Management Review, Spring 1965, pp. 43-51.

/11 U.S. Bureau of the Budget, Planning-Programming Budgeting, Bulletin No. 66-3, October 12, 1965 and Supplement to Bulletin No. 66-3, February 21, 1966.

/12 Nestor Terleckyj, Measurement of Output of Federal Government Programs, Lecture at the U.S. Naval Post-Graduate School, Monterey, California, October 29, 1965, p. 7.

/13 Some indications may be obtained from comparing results of benefit/cost and return on investment studies in these respective areas. Cf. Robert H. Haveman, Water Resource Investment and the Public Interest, Vanderbilt University Press, 1965; Eckstein, op. cit.; Krutilla and Eckstein, op. cit.; Robert Dorfman, editor, Measuring Benefits of Government Investments, Washington, Brookings Institution, 1965; Howard G. Schaller, editor, Public Expenditure Decisions in the Urban Community, Baltimore, Johns Hopkins Press, 1962; Theodore W. Schultz, "Reflections on Investment in Man," Journal of Political Economy, October 1962, Part 2, pp. 1-8; Selma J. Mushkin, editor, Economics of Higher Education, Washington, U.S. Department of Health, Education, and Welfare, 1962; Gary Becker, "Underinvestment in College Education?", American Economic Review, May 1960.

/14 "Statement of Charles J. Schultze," U.S. Congress, Joint Committee on the organization of Congress, Organization of Congress, Part 12, p. 1799.

/15 Arthur Smithies, The Budgetary Process in the United States, New York, McGraw-Hill, 1955; Jesse Burkhead, Government Budgeting, New York, John Wiley, 1956; Aaron Wildavsky, The Politics of the Budgetary Process, New York, Little, Brown & Co., 1964, Murray L. Weidenbaum and John Saloma, Congress and the Federal Budget, Washington, American Enterprise Institute, 1965.

/16 "Deflating the Great Society", editorial in St. Louis Post Dispatch, April 6, 1966, p. 2B.